

REMARKS

Upon entry of this amendment claims 49 and 50 are the only claims pending. Claims 49 and 50 are merely rewritten in independent form thus raising no new issues. Claims 33-38, and 41-46 are requested to be cancelled. No new matter has been introduced. Reexamination and reconsideration of the application are respectfully requested.

In the January 22, 2003 Final Office Action, the Examiner rejected claims 33-38, 41-46, 49, and 50 under 35 U.S.C. §103(a) as being obvious over Storms U.S. Patent No. 4,169,059 (hereinafter the Storms reference) in view of Marcus et al., U.S. Patent No. 4,126,560 (hereinafter the Marcus reference). The rejection of claims 49 and 50 is respectfully traversed.

The present invention relates to a metallic filter having a pleated filter element that includes a non-woven metallic mat and a metallic separating screen sandwiched between two metallic support screens. The non-woven metallic mat is formed of multiple layers of fibers in which each layer has the same size fibers and **each of the different layers may have fibers of various sizes**. In alternative embodiments, the fiber size **may be varied within each layer**, rather than using just a single size fiber in each layer; each layer may have different size fibers from one another.

Claim 49 rewritten (as now rewritten in independent form) recites:

A method of manufacturing a metallic filter for filtering a fluid, the method comprising:

forming a non-woven metallic mat by placing a first layer of metallic fibers on top of a second layer of metallic fibers, wherein said **metallic fibers in said**

first layer are of a different size than said metallic fibers of said second layer, and said metallic fibers in said first layer and said second layer are of a different size within said first layer and said second layer;

heat treating the non-woven metallic mat having a plurality of metallic fibers so as to form a plurality of sinter bonds among said plurality of metallic fibers;

creating a filter element having said non-woven, metallic mat;

pleating said filter element, said pleating causing at least one of said plurality of sinter bonds to be damaged;

fixedly forming said filter element into a filter assembly having a desired shape; and

repairing said at least one damaged sinter bond by heat treating said filter element after said filter element has been fixedly formed into said filter assembly.

In the January 22, 2003 Final Office Action, the Examiner stated the Storms reference teaches multiple layers of fibers of varying diameters and that the Marcus reference teaches layers of metallic fiber webs of different fiber stacked together and then sintered to make depth filters having twice the on-stream life. The deficiencies of the Storm reference are made up by the Marcus reference.

Applicant submits the Marcus reference does not disclose a method of forming a metallic filter wherein "forming a non-woven metallic mat by placing a first layer of metallic fibers **on top** of a second layer of metallic fibers, wherein said metallic fibers in said first layer are of a different size than said metallic fibers of said second layer, and said **metallic fibers in said first layer and said second layer are of a different size within said first layer and said second layer**"

The Marcus reference teaches "The filter medium of our invention comprises **layers of sintered metal fibers** and **a member** which separates at least two adjacent layers." (Column 1, lines 47-49.). The Marcus reference further states "This medium 10 includes **three layers** 12, 14, and 16. **Layer 12** contains 15 volume percent of **25 micron metal fibers** and has an average pore size of 80 microns. **Layer 14** contains 60 volume percent of **12 micron fibers** and has an average pore size of 30 microns. **Layer 16** contains 15 volume percent of **8 micron fibers** and has an average pore size of 10 microns. All the fibers are made of stainless steel. A **mesh screen 20** of woven 0.0014 inch diameter stainless steel wires 24 divides the medium 10 into an upstream section 10a, which includes the layers 12 and 14 and a protective outer screen 22, and a downstream section 10b, which includes the layer 16." (Column 2, lines 17-24).

As seen above, the Marcus reference discloses the layer 12 contains 25 micron metal fibers, layer 14 contains 12 micron metal fibers, and layer 16 contains 8 micron metal fibers.

Therefore, the Marcus reference **does not show** a first layer of metallic fibers on top of a second layer of metallic fibers, wherein said metallic fibers in said first layer are of a different size than said metallic fibers of said second layer, and said **metallic fibers in said first layer and said second layer are of a different size within said first layer and said second layer.**

The Marcus reference states "Although **we do not entirely understand** why our medium 10 has a longer on-stream life than conventional filter medium, we believe **the internal screen 20** acts like a holding chamber. (Column 2, lines 36-39.).

Applicant submits that this **lack of understanding** argues against the

Examiner's rejection that it would be obvious "forming a non-woven metallic mat by placing a first layer of metallic fibers on top of a second layer of metallic fibers, wherein said **metallic fibers in said first layer are of a different size than said metallic fibers of said second layer**, and said **metallic fibers in said first layer and said second layer are of a different size within said first layer and said second layer**"

Applicant also submits there is no motivation to combine the cited references.

Therefore, the Marcus reference does not disclose, nor is there motivation to combine the cited references, to show a method of forming a metallic filter including "forming a non-woven metallic mat by placing a first layer of metallic fibers **on top** of a second layer of metallic fibers, wherein said **metallic fibers in said first layer are of a different size than said metallic fibers of said second layer**, and said **metallic fibers in said first layer and said second layer are of a different size within said first layer and said second layer**". The filter metallic filter of the present invention having an increased on-stream life without the use of an additional internal screen between the first and second metallic fiber layers.

Accordingly, applicant respectfully submits that Independent claim 49 rewritten to recite all of the limitations of the base claim 33 distinguishes over the above-cited reference.

Independent claim 50 rewritten to recite all of the limitations of the base claim 41 recites:

A method of manufacturing a metallic filter for filtering a fluid, the method comprising:

forming a non-woven metallic mat by placing a first layer of metallic fibers on top of a second layer of metallic fibers, wherein said metallic fibers in said first layer are of a different size than said metallic fibers of said second layer, and said metallic fibers in said first layer and said second layer are of a different size within said first layer and said second layer;

heat treating the non-woven metallic mat having a plurality of metallic fibers so as to form a plurality of sinter bonds among said plurality of metallic fibers;

creating a filter element having said non-woven, metallic mat and a first metallic support screen;

pleating said filter element;

fixedly forming said filter element into a filter assembly having a desired shape; and

heat treating said filter element after said filter element has been fixedly formed into said filter assembly so as to bond said filter element to said metallic support screen.

Independent claim 50 also rewritten to recite all of the limitations of the base claim 41 contains limitations similar to Independent claim 49. Therefore, applicant submits that Independent claim 50 distinguishes over the above-cited reference for the same reasons as stated above.

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Applicant believes that the foregoing amendment and remarks place the application in condition for allowance, and a favorable action is respectfully requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles telephone number (213) 488-7100 to discuss the steps necessary for placing the application in condition for allowance should the examiner believe that such a telephone conference would advance prosecution of the application.

Respectfully submitted,

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Date: April 22, 2002

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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE
IN THE CLAIMS

IN THE CLAIMS:

Claims 33-38, and 41-46 are requested to be cancelled. Independent claims 49 and 50 are requested to be rewritten in independent form (but are otherwise not amended), and recite as follows:

49. (Amended) [The method according to claim 33, wherein] A method of manufacturing a metallic filter for filtering a fluid, the method comprising:
- forming a non-woven metallic mat by placing a first layer of metallic fibers on top of a second layer of metallic fibers, wherein said metallic fibers in said first layer are of a different size than said metallic fibers of said second layer, and said metallic fibers in said first layer and said second layer are of a different size within said first layer and said second layer;
- heat treating the non-woven metallic mat having a plurality of metallic fibers so as to form a plurality of sinter bonds among said plurality of metallic fibers;
- creating a filter element having said non-woven, metallic mat;
- pleating said filter element, said pleating causing at least one of said plurality of sinter bonds to be damaged;
- fixedly forming said filter element into a filter assembly having a desired shape; and
- repairing said at least one damaged sinter bond by heat treating said filter element after said filter element has been fixedly formed into said filter assembly.

50. (Amended) [The method according to claim 41, wherein] A method of manufacturing a metallic filter for filtering a fluid, the method comprising:

forming a non-woven metallic mat by placing a first layer of metallic fibers on top of a second layer of metallic fibers, wherein said metallic fibers in said first layer are of a different size than said metallic fibers of said second layer, and said metallic fibers in said first layer and said second layer are of a different size within said first layer and said second layer;

heat treating the non-woven metallic mat having a plurality of metallic fibers so as to form a plurality of sinter bonds among said plurality of metallic fibers;

creating a filter element having said non-woven, metallic mat and a first metallic support screen;

pleating said filter element;

fixedly forming said filter element into a filter assembly having a desired shape; and

heat treating said filter element after said filter element has been fixedly formed into said filter assembly so as to bond said filter element to said metallic support screen.